

# The Entire Distribution of Market Income in Germany, 1992–2001

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Income inequality rose dramatically in the US over the past decades, with other Anglo-Saxon countries following suit. Existing research suggests, however, that Continental European countries have not experienced similar increases in income inequality.<sup>1</sup> Our research, recently released as CEPR Discussion Paper No. 6251, shows that although income inequality in Germany has yet to reach US proportions, the trend is in that direction. Germany's rich are getting richer, and its super-rich are getting super-richer.

## Received wisdom

Previous research on the evolution of inequality of market incomes in Germany after 1990 established three facts:

- Overall inequality of market incomes slightly increased in the decade after reunification. This modest increase was mostly driven by an increase of inequality in eastern Germany during the first five years following reunification.
- The share of income accruing to the top 1% of the income distribution has increased only slightly since then.
- A sharp increase in inequality started after 2002, where the main culprit for increased market-income inequality seems to be the higher unemployment rate.

These facts, however, are based on data with serious limitations. Either they severely under-represent the very high incomes, or they contain little information about bottom segments of the distribution. In both cases, the resulting picture of the true overall distribution is quite distorted. Our research, by contrast, is based on a data set that represents primary or market incomes for the whole German population from 1992 to 2001.

<sup>1</sup> For a summary of the international evidence, see Thomas Piketty and Emmanuel Saez, "The evolution of top incomes: a historical and international perspective". *American Economic Review, Papers and Proceedings* 96 (2), 2006, 200–205

<sup>2</sup> For example, German Council of Economic Advisors (2006); <http://www.sachverstaendigenratwirtschaft.de>

## Overall income inequality in 2001

We concentrate on the distribution of market income at the individual level, looking at people over the age of 20 and living in Germany. Importantly, this includes people with negative or zero market income and all taxpayers in the top percentile of the income distribution. Specifically, our data set comes from a merger of individual-level data from the German Socio-Economic Panel and official income tax returns for re-unified Germany in the years 1992, 1995, 1998 and 2001. We analyse the evolution of gross market income at the individual level (the sum of individual gross market incomes is closely related to the concept of national income in GNP accounting). Our data allows us to distinguish three components of gross market income: (i) wage income, (ii) business income, and (iii) capital income. See our CEPR Discussion Paper 6251 for more details on the data.

**...Roughly a third of the German adult population lives more or less entirely on public or private transfers. ... On the other extreme, the 10% best-paid Germans earn more than 40% of total market income...**

Since our data includes individual with negative or zero income, the mean (about €20,000) and the median (less than €10,000) for 2001 seem rather low. Moreover, the fact that the median is so much lower than the mean stems from the fact that the income distribution is far from a bell-shaped distribution. In fact, the income distribution is very skewed towards high-earners and there are very large differences between its lower and upper tails of the distribution. As Table 1 shows, the bottom 50% of individual earners together took home only 3% of the gross market income. Of course, this includes many people with no market income, such as the retired, housewives, the unemployed, and the disabled, and market income does not tie directly to standards of living. Nevertheless, it is

**Table 1** Distribution of gross market income in Germany, 1992–2001

	Gross market income <sup>1</sup> , capital gains excluded				1992 = 100		
	1992	1995	1998	2001	1995	1998	2001
Average income at 2000 prices <sup>2</sup>							
Mean income (€)	20044	19767	19808	20028	98.6	98.8	99.9
Median income (€)	12915	11761	10615	9790	91.1	82.2	75.8
Relative difference <sup>3</sup> (%)	44.0	51.9	62.4	71.6	118.1	141.9	162.8
Gini coefficient <sup>4</sup> )	0.5813	0.5861	0.5983	0.6064	100.8	102.9	104.3
Generalized entropic measures <sup>4, 5</sup>							
GE(0)	1.3863	1.4603	1.4916	1.4813	105.3	107.6	106.9
GE(1)	0.6961	0.6988	0.7409	0.7603	100.4	106.4	109.2
GE(2)	3.9909	4.9532	6.6778	7.4735	124.1	167.3	187.3
Ratio of percentiles							
90 / 50	3.60	4.01	4.55	5.09	111.4	126.3	141.3
95 / 90	1.27	1.29	1.28	1.28	101.2	100.2	100.4
99 / 90	2.23	2.15	2.23	2.24	96.5	99.8	100.4
99.9 / 90	7.34	6.62	7.01	7.06	90.2	95.6	96.2
99.999 / 90	118.44	111.42	127.92	130.05	94.1	108.0	109.8
Structure in % by income fractiles							
1st decile	- 0.87	- 1.19	- 0.99	- 0.99	136.2	114.2	114.0
2nd decile	0.05	0.04	0.03	0.03	71.8	60.8	56.0
3rd decile	0.22	0.17	0.13	0.13	76.5	61.5	60.1
4th decile	1.42	1.04	0.80	0.76	73.3	56.4	53.6
5th decile	4.59	4.02	3.46	3.09	87.6	75.4	67.4
6th decile	8.28	8.12	7.58	7.02	98.1	91.5	84.8
7th decile	11.96	12.26	11.75	11.35	102.5	98.2	94.9
8th decile	15.59	15.99	15.88	15.89	102.6	101.8	101.9
9th decile	19.98	20.54	20.84	21.10	102.8	104.3	105.6
10th decile	38.78	39.00	40.53	41.62	100.6	104.5	107.3
Total	100.00	100.00	100.00	100.00	100.0	100.0	100.0
Top 1%	11.20	10.64	11.60	11.98	95.0	103.5	106.9
Top 0.1%	4.18	3.85	4.38	4.56	92.2	104.9	109.2
Top 0.01%	1.62	1.55	1.83	1.90	95.6	112.6	117.3
Top 0.001%	0.55	0.59	0.72	0.75	107.3	130.5	135.4
Top 0.0001%	0.16	0.20	0.24	0.24	125.4	152.3	153.0

Notes: 1 Income from business activity, wage income, capital income, exclusive public and private pensions; measured at the individual level. 2 Deflated by consumer price index. 3 Difference of  $\ln(\text{mean})$  and  $\ln(\text{median})$ . 4 Not including cases with zero or negative income. 5 GE(0) is the mean logarithmic deviation, GE(1) is the Theil index, and GE(2) is half the square of the coefficient of variation.

Source: ITR-SOEP data base.

striking to see how such a narrow fraction of the population generates the bulk of the market income. Starting from the other end, we see that about 80% of the market income is earned by only 30% of adults.

The distribution of market incomes across deciles reveals that roughly a third of the adult population receives almost no market income, living more or less entirely on either public or private transfers. This group includes the retired, housewives, the unemployed, and the disabled. On the other extreme, more than 40% of total market income accrues to the class of the top 10% earners (the so-called 10th decile).

### Rising income inequality from 1992 to 2001

Comparing the evolution of the mean and the median shows that income inequality has markedly increased. Whereas real mean income remained virtually constant between 1992 and 2001, median income fell by almost 25% in this period. As a result, the difference between the mean and the median increased by more than 60 percentage points. This is mainly related to an increasing number of people with very little or no market

income, which pulls down the median.

Evidence of a broad increase in income equality can be seen by looking at the extremes. In 2001, more than 40% of total market income accrued to the top decile, and its share increased by 7.3% between 1992 and 2001. At the same time, the income share going to the middle of the distribution declined. We suspect that this may be due to compositional effects, in particular the significant increase in unemployment in the period 1992 to 2001, especially in East Germany.

Formal indexes of inequality confirm this picture. The Gini-coefficient and the generalised entropy measures GE(0) and GE(1) of income inequality only increased slightly between 1992 and 2001, there was a very strong increase in the top-sensitive GE(2) entropy measure in this period.<sup>3</sup> This indicates that the modest overall rise in income inequality was driven by changes at the top of the distribution. As our integrated database contains all people in the top 1%, we can break down the top percentile further into very small fractiles without sam-

3 The various entropy measures are defined in the notes to Table 1.

**Table 2** Top average real market incomes in Germany, 1992–2001

Gross market income <sup>1</sup> , capital gains excluded	1992	1995	1998	2001	1995	1998	2001
		1,000 euros at 2000 prices <sup>2</sup>				1992 = 100	
Mean income	20.0	19.8	19.8	20.0	98.6	98.8	99.9
Media income	12.9	11.8	10.6	9.8	91.1	82.2	75.8
Average income							
Top 10%	77.7	77.1	80.3	83.4	99.2	103.3	107.3
Top 1%	224.5	210.4	229.7	239.9	93.7	102.3	106.8
Top 0.1%	837.5	761.7	868.1	914.1	90.9	103.7	109.1
Top 0.01%	3252.0	3066.6	3617.8	3810.9	94.3	111.2	117.2
Top 0.001%	11082.6	11721.4	14280.4	14981.1	105.8	128.9	135.2
Top 0.0001%	31437.7	39051.4	47230.3	48151.9	124.2	150.2	153.2
Lowest income							
Top 10%	46.5	47.2	48.3	49.8	101.4	103.8	107.1
Top 1%	103.7	101.6	107.5	111.6	97.9	103.6	107.6
Top 0.1%	341.4	312.3	338.8	351.9	91.5	99.3	103.1
Top 0.01%	1401.1	1211.3	1385.0	1471.3	86.5	98.9	105.0
Top 0.001%	5510.0	5257.7	6178.6	6482.0	95.4	112.1	117.6
Top 0.0001%	18360.4	19696.6	25456.4	26255.5	107.3	138.6	143.0

Notes: 1 Income from business activity, wage income, capital income, exclusive public and private pensions; measured at the individual level  
2 Deflated by consumer price index

Source: ITR-SOEP database

pling error. Looking at the economic elite in Germany, defined as those in the 0.001% top fractile (650 persons), we observe that this group's share of market income rose by more than a third. Even more pronounced is the increase in the share of market income at the very top, i.e. the 0.0001 percentile, as Table 1 shows. This tiny group of 65 persons increased their share by almost 50%.

### Market incomes at the Top

In one of those famous exchanges between clever novelists, F. Scott Fitzgerald is supposed to have said: 'The rich are different from you and me.' To which Ernest Hemingway replied, 'Yes, they have more money.' This is true in Germany and getting more so.

To become a member of the German economic elite – the top 0.001% of the income distribution – your market income had to exceed €6.5 million in 2001, as Table 2 shows. On average, a member of this group made almost €15 million in that year, which is approximately 1,500 times the median income. Perhaps more tellingly, the average income in this group was more than 300 times the lowest income in the top decile, and almost 180 times the average income in top decile.

However, even the average member of the German economic elite could feel relatively poor compared to the 65 individuals at the very top; they had an average income of almost €50 million. The income of these 65 persons together amounted to more than €3 billion.

Starting at a more moderate level of affluence, consider people with incomes that put them in the top 10% of all earners. Getting into this group required an annual income of about €50,000 in 2000 prices, although the average income in this bracket amounted to €83,400 – an average income that corresponds roughly to a widely-held notion of the German middle class. To become a member of the top 1%, you had to have a yearly market income of about €112,000, but the average income of this group was more than double that at roughly €240,000. The next step up the income stairs is significantly higher. To make it to the top 0.01% – about 6,500 people in Germany – you had to earn a market income of more than €1.4 million, while the average income of these millionaires amounted to about €3.8 million.

Figure 1 shows that market incomes have evolved quite differently among Germany's middle class, rich and super-rich. Whereas average market income in this

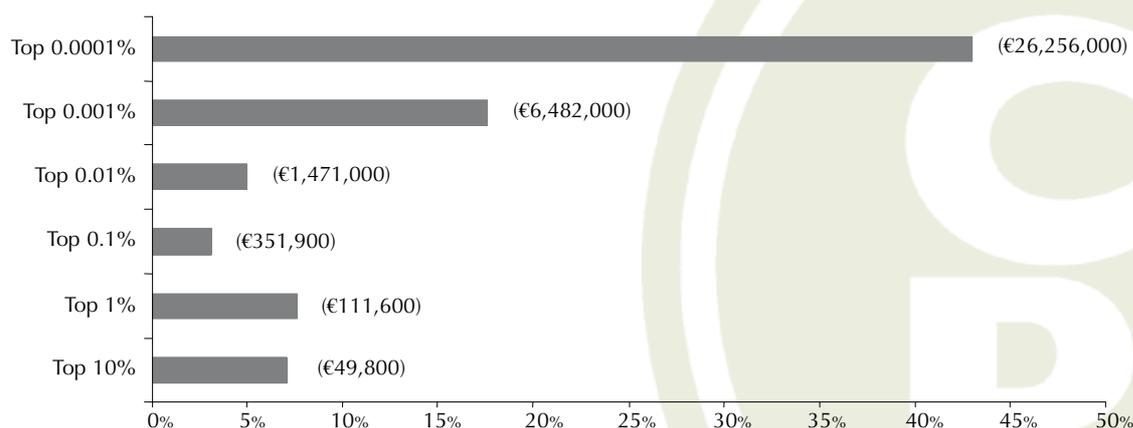
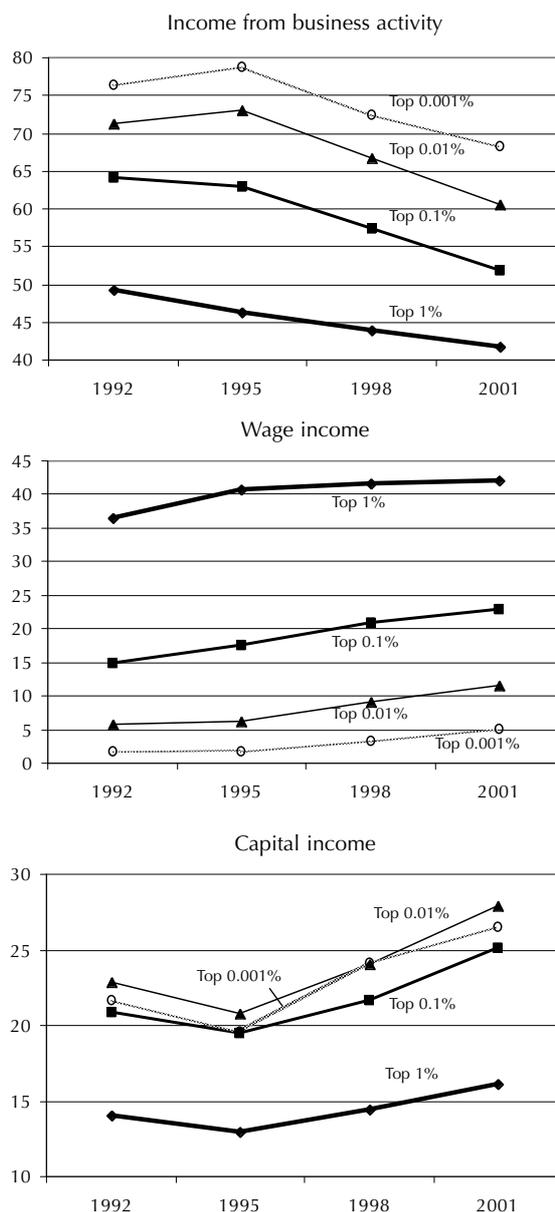
**Figure 1** Income growth by income category (group's average 2001 income in parentheses)

Figure 2 Share of income components in top market incomes in Germany, 1992–2001



Source: ITR-SOEP database

percentile increased by some 7% between 1992 and 2001, for the economic elite it increased by more than a third (35.2%) in this period, and for the super-rich by more than 50%. These figures, which plot a sub-set of the numbers in Table 2, exclude capital gains from the definition of market income, so these very high incomes are not affected by realization proceeds of (parts of) an enterprise or shareholdings.

**The composition of top incomes**

The rich are not only different because they have more money. They also get it from different sources. Taking the population as a whole, wage income accounted for more than 80% of market income in 2001, with the remainder made up of income from business activity (11%) and capital income. The numbers for the the top decile are not too different – as a group, they receive more than 70% of market income in form of wages and salaries. But for the top percentile of earners, this share drops to about 40%. Correspondingly, the share of capital income is about a sixth of overall market income in

the top percentile, compared to less than 7% in the top decile.

As with income growth, we see a great deal of variation in the income sources of the top 1% category. The share of wages in total income monotonically declines with income, with wages amounting to only about 5% of the income received by the by the German economic elite in 2001 (0.001% top fractile); two thirds of their earnings were from business activity and about 27% from capital. In absolute terms, this means that this group earned, on average, some €800,000 in form of salary – an amount that was complemented, on average, by €10 million from business income and €4 million from capital income.

Figure 2 shows how the evolution of the share of wages and salaries in market income increased monotonously across all fractiles of the top percentile. The figure also reveals that the share of business income in the top percentile declined significantly between 1992 and 2001, from about 50% to 42%. For the economic elite, the respective shares moved in the same direction. The

share of business income dropped by roughly 8 percentage points, and the share of income from capital increased by 5 percentage points.

### Comparisons to France and the US

Compared to France and the US, the share of wage income at the top is quite small in Germany. In the US, in 1998 about 45% of all income accruing to the top 0.01% consisted of wage income; for the corresponding group in France the share was about 22%.<sup>4</sup> Thus, our analysis adds a novel aspect to the comparison of Germany with the US and France. Previous research showed that, with respect to the concentration of income, Germany is a middle case between the highly concentrated US income distribution and the less concentrated French one.<sup>5</sup> With respect to the income composition pattern, our analysis shows it is France which lies between the US and Germany. The German affluent rely much less on wages and salaries for their incomes than their counterparts in France and the US. However, the increasing wage share of the German affluent corresponds to recent developments in the US where increasing income inequality was largely driven by an increasing share of wage income in the top percentile of the income distribution.<sup>6</sup>

4 See Thomas Piketty and Emmanuel Saez, "Income Inequality in the United States, 1913-1998". *Quarterly Journal of Economics* 118, 2003, 1-39; Thomas Piketty, "Income Inequality in France 1901-1998". *Journal of Political Economy* 111, 2003, 1004-43. Note, however, that these studies use a somewhat different definition of market income (taxable income) and of household population; for a discussion and comparison, see Bach, Comeo and Steiner (2005).

5 Fabien Dell, "Top Income in Germany and Switzerland over the Twentieth Century". *Journal of the European Economic Association* 3, 2005, 1-10.

6 See Ian Dew-Becker and Robert J. Gordon, "Where did the productivity growth go? Inflation dynamics and the distribution of income". *Brookings Papers on Economic Activity* 36(2), 2005, 67-127.

### Concluding remarks

Market incomes result from complex interaction of market forces, economic policies, and social institutions, e.g. the system of collective wage negotiations. Understanding how markets, policy and institutions affect the income distribution is an important research topic. Our research takes the first steps by providing a comprehensive assessment of the evolution of gross market incomes. Moreover, the distribution of primary incomes has important consequences for the perceived legitimacy of the market economy and is the starting point for positive and normative analyses of governmental redistribution of income.

After 2001, the last year for which individual tax returns data are currently available, Germany has experienced a strong increase in unemployment and a significant drop of labour's share in national income, while entrepreneurial and property incomes have boomed. We therefore expect the rise of income inequality revealed by our analysis to have continued up to the present day, possibly in an even more accentuated form. Recent data from the German Socio-Economic Panel (SOEP) do suggest that the distribution of market incomes has become more unequal since 2001, although these data alone cannot provide a complete picture because they fail to represent top incomes.

7 See Appendix 3 in our CEPR Discussion Paper No. 6251 for details.

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